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A NEW AUSTRALIAN SPECIES OF *RIOXA*, WITH A REMARKABLE LIFE-HABIT (DIPT. ; TRYPANEIDAE).

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Dr. Guy A. K. Marshall has recently submitted to me a Trypeneid, discovered in Northern Australia by Mr. G. F. Hill. The fly is said to have been bred from larvae having habits very different from those of the related members of the family ; and being moreover interesting from a morphological and biogeographical standpoint, it forms the object of the present note.

The Oriental species of CERATITINAE with 6 bristles on the scutellum, with a complete thoracic chaetotaxy, with a bristly third longitudinal vein, with a not wavy second longitudinal vein, and with a wing-pattern consisting of an extended brown patch with hyaline spots and hyaline indentations, have been ascribed by me* to the two genera *Diarrhagma* and *Rioxa*. While the first of these genera is less numerous and is well characterised by the form of the head, the second contains heterogeneous elements, which have been divided by me into three groups. Following on this, Prof. Hendel† erected the new genus *Hexacinia* for the peculiar group of *stellata*, Macq., and divided the remaining species into the genera *Rioxa* (with a pectinate arista) and *Rioxoptilona* (with a plumose arista). But this last distinction seems to be a premature one, as it is impossible to draw a sharp line of separation between the species in which the arista is plumose on the upper side alone, and those in which it is plumose on both sides.

I have before me two species of Australian TRYPANEIDAE which are referable to the genus *Rioxa*, *s.l.* ; they closely resemble one another both in body coloration and wing markings, but may be distinguished as follows :—

- 1(2). Two upper and two lower pairs of orbital bristles present ; arista regularly pilose, with some short hairs only on the under side ; mesonotum and scutellum without dark spots, the latter with the middle pair of bristles weaker than the others ; discoidal cell with two hyaline spots, which are confluent with the hyaline indentations of the hind border

musae, Froggatt

* Mem. Ind. Mus., Calcutta, 1913, iii, pp. 53-175, pl. viii-x (vide pp. 108 and 111)

† Wien. Ent. Zeit., 1914, xxxiii, pp. 73-98 (vide pp. 78 and 82).

- 2(1). Only a single upper and a single lower pair of orbitals; arista pilose on both sides and in the male with a tuft-like pilosity at the end; mesonotum in front of the scutellum with two blackish spots, which are extended over the scutellum itself; middle scutellar bristles as strong as the others; discoidal cell with but one isolated hyaline spot . . . *termitoxena*, sp. n.

Rioxa musae, Froggatt, 1899.

Trypeta musae, Froggatt, Agric. Gaz. N.S.W., Sydney, 1899, x, p. 501, pl. ii, figs. 1-3; id., "Austral. Insects," Sydney, 1908, p. 308; id., Report on Fruit-fly and other Pests in various Countries, 1907-8, Dept. Agric. N.S.W., 1908, p. 113, pl. vii, figs. 1-3.

Rioxa (Trypeta) musae, Froggatt, Proc. Linn. Soc. N.S.W., 1911, xxxv (1910), p. 872.

Rioxa musae, Bezzi, Mem. Ind. Mus. 1913, iii, pp. 76 and 114.

The present species was originally obtained from bananas brought to Australia from the New Hebrides; but it has been found subsequently breeding in both cultivated and native fruits in Queensland and New South Wales.

2. **Rioxa termitoxena** sp. nov. (fig. 1).

Differing from all the other known species in having only a pair of upper orbital bristles, and very distinct on account of the peculiar arista of the male.

♂♀. Length of body, 6.5-7 mm.; of the ovipositor, 1.5 mm.; of the wing, 7-7.5 mm.

Head (fig. 1, A) entirely reddish-yellow; occiput quite unspotted and shining, chiefly near the borders; it is paler on the sides beneath, and the lower swellings are not developed. Frons opaque, with the middle stripe more dark reddish (sometimes brownish on the fore half in the female), with more yellowish sides and with a black ocellar spot; it is clothed with rather dense, short and equal, black hairs; lunula yellowish. Face shallowly but distinctly concave above the rather prominent mouth-border; the broad keel between the antennal grooves is flat; cheeks very narrow, linear, whitish; jowls broader than the third antennal joint, unspotted.

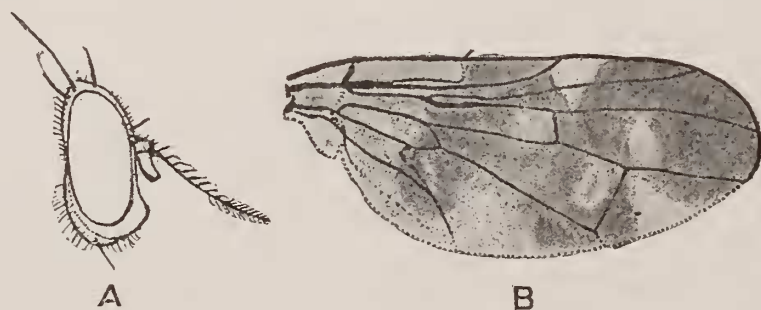


Fig. 1. *Rioxa termitoxena*, sp. n.
a, head of male; b, wing of fully coloured female.

Eyes rather broad, but with the vertical diameter longer than the horizontal one. Antennae inserted near the middle of the eyes, shorter than the face, and entirely reddish; first joint very short, with black hairs at the sides; second joint short and globular, with short black hairs; third joint about twice as long as the first two joints together, almost bare, rounded at the end, only slightly concave above; arista with rather long and scattered hairs from the base to the end on the upper side, and on the apical half alone beneath; in the male the terminal hairs of the

arista are closer together on both sides, forming thus a kind of apical tuft, which is not clearly indicated in the female. Palpi broad, yellowish, reddish at the outer border, with yellowish hairs and some black bristles; proboscis dirty yellowish, with pale hairs; the hairs of the lower part of the head are likewise pale yellowish. All the cephalic bristles are black, those of the occipital border being numerous and pointed; the postvertical are long; outer vertical half as long as the inner one; no ocellar; only a single superior orbital,* the basal one; only a single inferior orbital, the apical one, which is placed very near the antennae, and is rather weak and short; genal bristle well developed, black.

Thorax on the back entirely reddish and rather shining, the very short pubescence black and the whitish dust very sparse; the humeri, the sides above the notopleural line, and a broad postsutural stripe above the root of wings, are of a more yellowish colour, but not sharply defined; along the dorsocentral lines there is sometimes in fully coloured specimens a brownish, ill-defined longitudinal stripe; the two blackish spots in front of the scutellum are rounded and lie between the praescutellar and inner pair of the posterior supra-alar bristles, not extending in front beyond the praescutellar bristles. The pleurae are entirely reddish and shining, quite unspotted, even the hypopleural spots being not paler than the surrounding parts; the short hairs are mainly black. Scutellum triangular and of rather large size; it is flattened above, with well developed lateral keels; it is entirely yellowish, but on each side there is a triangular blackish or brownish spot in contact with that at hind border of the mesonotum; it is clothed on the sides with short black hairs, and bears six equally strong, black bristles, even those of the middle pair being as strong as the others, and those of the apical pair being parallel or diverging. Post-scutellum and mesophragma shining black (in fully coloured specimens), with a narrow, reddish, middle longitudinal stripe. Thoracic chaetotaxy complete; all the bristles are black, even the scapular ones, the middle pair of which is as strong as the lateral ones and has its bristles rather distant; praesutural bristles rather weak and short; dorsocentral bristles placed much behind, about on a level with the praescutellar ones; one strong mesopleural bristle, and 2-3 more weak ones below it; pteropleural bristle as strong as the sternopleural one. Squamulae and halteres whitish, the former with white hairs at the border.

Abdomen elongate, slightly constricted at base, and about as broad as the thorax at the end of the second segment; it is shining reddish, with broad, shining black bands at base of segments 3-5, the bands being in the female broadly interrupted in the middle, while in the male they are entire or nearly so, the last segment being entirely black; the hind borders of segments 2-5 are pale yellowish with whitish dust, thus contrasting strikingly with the black basal bands. Male genitalia black, rounded, prominent below; ovipositor shining black, depressed, with the basal segment as long as the last two abdominal segments together. Venter entirely reddish-yellow, unspotted. The short abdominal pubescence is black, like the bristles at the sides and end; the two basal segments are clothed with soft, long whitish hairs at the sides.

* In the allied genus *Ptilona* there is likewise but a single s. or., but it is the apical one. In the recently described genus *Ortaloptera*, Edwards (Trans. Zool. Soc., 1915, p. 419, pl. xxxviii, fig. 9), from New Guinea, the cephalic chaetotaxy is very like that of the present species, while that of the thorax is much more reduced.

Legs entirely and evenly reddish from the coxae to the end of the tarsi; their short pubescence is pale, but it is black on the outer side of the femora; front femora with long black hairs above, and with 3-5 black bristles below at the end; middle tibiae with two apical black spurs, and with a short row of 2-4 short and stout black bristles at the base on the hind sides; hind tibiae with a complete row.

Wings (fig. 1, B) long and broad, with a well developed costal bristle; the stigma is of usual length; the second longitudinal vein is straight; the third is bristly throughout, moderately bent backwards beyond the middle of its last portion, and parallel with the last portion of the fourth; small cross-vein below the end of the first longitudinal vein and beyond the middle of the discoidal cell; hind cross-vein long, as long as or even a little longer than its distance from the small one, reaching below the fifth vein at an obtuse angle; point of the anal cell acute and longer than the second basal cell. The base of the wing is hyaline to a little before the end of the second basal cell and to the base of the stigma; but in fully coloured specimens the second costal cell, the basal half of the first basal cell, the base of the second basal and more narrowly that of the anal cell, are pale yellowish. The stigma is entirely dark brown, without any hyaline part. The brown patch extending across the greater part of the wing is darker on the upper half, lighter on the lower, and distinctly yellowish in some parts towards the middle. At the fore border there is a single hyaline indentation of triangular shape just beyond the stigma, reaching with its point the third longitudinal vein, a little beyond the small cross-vein. The three rounded hyaline spots in the middle are as follows: one at the end of the first basal cell, before the small cross-vein; one a little before the middle of the first posterior cell, above the upper end of the hind cross-vein; and one of greater size before the end of the discoidal cell, in contact above with the fourth vein, and distant beneath from the fifth vein. At the hind border there are two hyaline indentations; a smaller one of more triangular shape in the second posterior cell, pointing with its inner corner to the upper basal angle of the same cell, without reaching it; a larger and broader one towards the middle of the third posterior cell, with its inner, broad end in contact with the fifth vein, but without entering the discoidal cell. The axillary lobe is mainly hyaline, with a brown spot at the end of the anal cell, not extending beyond the axillary vein; the alula is hyaline. The narrow extreme base of the marginal cell is hyaline, like a small elongate spot into the first basal cell, just before and above the end of the second basal cell; the whitish oblique stripe into the brown base of the third posterior cell is very striking. The indentation of the fore border and the three hyaline spots in the middle are distinctly whitish, like the inner or superior part of the broad indentation of the third posterior cell.

Type ♂ (British Museum) and an additional specimen of female sex from North Australia, Port Darwin, 14. x. 1914 (*G. F. Hill*), bred from galleries of a termite, *Mastotermes* sp., in tree-trunks; the specimens of this couple are not fully coloured, as is frequently the case with bred flies. Type ♀ (British Museum), and an additional specimen of the same sex, from same locality and same collector, 8, viii, 1913; these specimens are fully coloured, having been taken on the wing.

Macquart (*Mém. Soc. Sci. Lille*, 1855, p. 144 [124], pl. vii, fig. 7) has described *Urophora bicolor* from Adelaide (type in Bigot's Collection), which is evidently a

Rioxa, but differs from both the preceding species in the wing pattern. Froggatt (Australian Insects, p. 308) reports it as a *Trypeta* as follows: "A larger native species with reddish brown head and thorax; with black body; with beautifully mottled black wings having the base and sides unclouded. I have taken it on the trunks of wattle trees near Bathurst, N. S. Wales." It is probable that this species is different from that of Macquart; the habit of settling on trunks of trees is very suggestive of that of the new species here described. In his report of 1909 Froggatt has briefly compared (p. 114) this *T. bicolor* with his own species *T. musae*.

Macquart in the above-cited work (1847, p. 109 [93], pl. vi, fig. 7) has also described from Australia (coll. Bigot) *Tephritis lugubris*, which is likewise possibly a *Rioxa*, but has a very different wing pattern and body coloration.

The *Trypeta pornia* of Walker (List, 1849, p. 1039), from Port Stephenson, is also probably a species of *Rioxa*.

It would be interesting to know if the reduced cephalic chaetotaxy (by the want of the second upper orbital bristle) is a character of the true Australian species of *Rioxa*; in this case it may be considered of generic value, chiefly when supported by such a different kind of life-history as that observed for the new species *T. termi-toxena*.

Of the numerous species recorded or described from New Guinea, only the following seem to belong really to *Rioxa*: *formosipennis*, Walker, 1861; *lateralis*, Kertész, 1901; *sexguttata*, De Meijere, 1913; and *seriata*, De Meijere, 1915; but they all have a wing pattern very different from that of the species here described. The other species, like *debeaufortii*, De Meijere, 1906, *nigra*, De Meijere, 1906, *insignis*, De Meijere, 1913, *nigripennis*, De Meijere, 1913, and *flava*, Edwards, 1915, seem to belong to other genera; *quadrifera*, Walker, 1861, was placed by Prof. Hendel in his new genus *Themaroïdes* in 1914.
